Portable spill kits are kept on the vessels decks and at the terminals, and contain all the supplies needed to contain, absorb, and dispose of spilled materials. The kits are checked and inventoried on a frequent basis — every time the crew conducts a security sweep.

1-Sorbent Sweep
2-Sorbent Pads
3-Sorbent Boom
4-All Purpose Absorbent
5-LIne
6-Duct Tape
7-Serrated Knife
8-Coveralls
9-Safety Glasses
10-Gloves
11-Boots
12-Sparkless Scoop
13-Plastic Bags
14-List of Contents

Choosing the Fueling Method for Particular WSF Vessels

The choice between fueling at a shore side facility and by onboard tanker truck depends on the vessel and the route it operates on. This choice is made by balancing the following considerations:

- **Schedule Implications** – Because fueling is performed when the vessel is not in passenger service, WSF needs to be able to fuel the vessel and return to service at its scheduled time. For the Pt. Defiance/Tahlequah run, taking the vessel to fuel at Harbor Island would impact the current service schedule (at a loss of one trip per week).
- **Fueling Efficiency** – Fueling rates and capacities vary between the two methods of fueling. Fueling facilities have large storage tanks from which fuel can be pumped under pressure to the vessel at rates up to 1.200 gallons per minute. During an hour and a half of fueling, a tanker truck can transfer approximately10,000 gallons to the vessel's fuel tank, while a marine fueling facility can pump 70,000 gallons of fuel in this same amount of time. Consequently, vessels with very large fuel tank capacities are more efficiently fueled by the pressurized, large-volume fueling system available at the fueling facility.
- **Vessel Maintenance Schedule** – Engine room crews perform vessel maintenance during periods when the vessel isn't carrying passengers. Since fueling operations require the undivided attention of engine room crews, the time needed for tanker truck fueling cannot not be allowed to grow so large as to hinder the ferry system's ability to perform routine vessel maintenance.
- **Operating Costs** – Moving a vessel from its route to the fueling facility requires both deck engine room crews, necessitating extra and/or prolonged deck crew shifts and associated costs. This factor must be weighed against the greater speed of fueling operations at the fuel dock.
- **Costs of Fuel in Taking the Vessel to the Marine Fueling Facility** – In addition to added staffing costs, the vessel uses extra fuel to travel from its ordinary route to the fueling facility. How much extra fuel varies depending on the distance from the route served to the fueling facility. In 2003, WSF vessels fueling at the Pier 15 marine facility burned about 52,000 gallons of fuel just transiting to and from the facility.
- **Price of Fuel at the Marine Fueling Facility** – In addition, in WSF's experience, there is a difference in per-gallon cost of fuel between fueling at a facility and by tanker truck. Although the amount of this difference varies, typically fuel bought at a marine facility costs approximately one to five cents per gallon more than the cost of fuel supplied by tanker truck.

WSF's Choice of Method

Based on the considerations listed above, in 2004, vessels serving the following routes were fueled at the marine fuel facility at Pier 15:

Seattle / Bainbridge
Edmonds / Kingston
Mukilteo / Clinton
Seattle / Vashon *(Passenger-Only)*

Vessels on other routes were fueled at Bremerton, Port Townsend, Anacortes, and Point Defiance terminals by the onboard tanker truck fueling method.

Washington State Ferries

PREVENT
PREPARE
RESPOND

WSF's goal is to conduct each and every oil transfer without a spill. However, should a spill occur, WSF vessels and crews are prepared and ready to respond.

Winter 2005

How Washington State Ferries Fuels Its Vessels

Washington State Ferries (WSF), the largest ferry system in the nation, carries over 24 million passengers and nearly 11 million vehicles a year on 10 routes across Puget Sound. WSF has 24 active ferries that operate an average of 18 hours a day — the largest carry up to 220 cars and 2,500 passengers.

Fueling its vessels is one of WSF's most important operational and environmental responsibilities. In 2003, operating every day of the year, WSF vessels used approximately 18.5 million gallons of diesel fuel, while making more than 173,000 transits totaling more than a million miles. Hundreds of vessel fueling operations are required.

Vessel fueling is just one type of oil transfer performed on WSF vessels. Others include taking on lubricating and hydraulic oils, and removing used oils and bilge water from the vessel. But in terms of volume and frequency, vessel fueling makes up the vast majority of oil transfers. During every oil transfer, regardless of type or size, WSF crews adhere to the same rigorous set of safety and environmental procedures, detailed inside.

For more information:

Celia Schorr
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Washington State Ferries
Customer and Community Relations
(206) 515-3918

Washington State Department of Transportation

Veteran Employees Perform Vessel Fueling

WSF's first line of defense in preventing spills, and ensuring a safe fuel transfer, is its trained crews. WSF's engine room crews are responsible for fueling the vessels. In all cases, the vessel Chief Engineer acts as the "Person in Charge" (PIC) and oversees all aspects of the fueling process. The Chief Engineers are Coast Guard licensed professionals and the people most familiar, based on training and experience, with their vessel's engineering systems.

Every procedure performed during an oil transfer of any kind is documented in WSF's Safety Management System (SMS) and in the Oil Transfer Packet, used by WSF crews during fueling operations.

The WSF Oil Transfer Packet

At the heart of WSF's fuel transfer program is a customized "Oil Transfer Packet" for every vessel in the WSF fleet, which is used for every oil transfer. The Oil Transfer Packet is a detailed list of everything the crew does, checks for, and records during every oil transfer. Each Packet is specific to a particular vessel. Information in the Packet includes valve and gauge configurations, size and location of the vessel's fuel tanks, fueling method to be used for that vessel, and the location of safety and environmental equipment onboard the vessel.

The Packet also includes spill response and other emergency procedures, important contact numbers, and the references to all the legal requirements to which the program conforms.

The Oil Transfer Packet is based on three fundamental elements, which together form the core of WSF's program for safe and efficient fueling operations and other oil transfers.

- Every fueling and other oil transfer is done under the direct and personal supervision of a designated "Person In Charge" (PIC) — for WSF this is always the vessel Chief Engineer.
- Every person involved with the fueling operation has a clear understanding of his or her own roles and responsibilities, as well as that of every other person involved in the oil transfer.
- The applicable steps, procedures and instructions in the Oil Transfer Packet are followed every time an oil transfer is performed, without exception.

Procedures to Safely Load Fuel and Prevent Spills During WSF Vessel Fueling

To ensure consistently safe oil transfer operations that meet or exceed all applicable federal (U.S. Coast Guard) and state (Department of Ecology) regulations, WSF has documented all oil transfer procedures in the company's Safety Management System and in the vessel-specific Oil Transfer Packets. The system now in place has been used since 2001, although improvements and refinements have been incorporated as necessary. Highlights of these procedures are listed below.

Prior to fueling, the designated WSF Person in Charge (PIC):

- Determines the quantity of fuel needed; sounds the tanks to ensure adequate capacity is available to receive the amount of fuel planned; plans the filling sequence and notes the final tank levels to be expected upon completion of fueling
- Reviews procedures with, and trains as necessary, all WSF crew members who will be involved in the fuel transfer operation
- Completes all required security checks
- Verifies that the vessel moorings are properly secured and that the valve alignments for the fueling procedures are correct
- Deploys sorbent boom on vessel deck around the fuel truck (called pre-booming)
- Ensures that all spill response equipment is available and in place
- Completes the "Pre-Transfer Conference" with his or her counterpart Person in Charge representing the fueling facility or tanker truck (this PIC is also designated prior to fueling). During the pre-transfer conference, the PICs must:
  - Identify the WSF Point of Transfer Person (the person who will always be standing by at the point of transfer, typically the PIC or designee) and Deck Rover (person making continuous rounds to check for anything out of the ordinary) and review their respective duties during the fuel transfer
  - Complete the required Declaration of Inspection
  - Confirm emergency communication and emergency shut down procedures

Fueling can begin only after all of these steps have been completed and the two PICs (one on behalf of WSF, one for the fueling facility or tanker truck) agree to commence fueling.

During fueling, the WSF Person in Charge and the fueling team are responsible for:

- The fueling operation only (nothing is to interfere with this primary responsibility) which includes:
  - Continuous monitoring of tank levels, fuel connections and supply hoses
  - Constant patrolling of the vessel and environment surrounding the vessel
  - Ongoing communications between all members of the team

Note: *Any person present has the authority and responsibility to stop the fuel transfer should the situation warrant.*

Upon completion of the oil transfer, the WSF Person in Charge:

- Documents that the Pre-Transfer Conference was held
- Completes the oil transfer section in the engine room log
- Staples a copy of the Oil Transfer Packet to the Declaration of Inspection and retains these documents for 30 days

WSF Fueling Safety and Spill Prevention History

Knock on wood, but WSF's procedures and the diligence of its employees have contributed to an excellent record when it comes to preventing oil spills. For example, in 2003 engine crews transferred approximately 18.5 million gallons of diesel fuel to our vessels both at Pier 15 on Harbor Island and by tanker truck at various WSF terminals. WSF crews transferred this fuel in approximately 1,500 separate operations. No fuel spill to the environment occurred. In fact, over the last three years, fueling crews have successfully transferred approximately 55 million gallons of diesel fuel in about 4200 separate transfer operation without a spill to the environment.

Unfortunately, our record is not perfect. A fuel spill did occur at the Pier 15 marine fueling facility on Harbor Island in October 2000 when the passenger-only ferry M/V TYEE's tank was overfilled. Approximately 15 gallons of diesel fuel was spilled.

WSF Oil Spill Preparedness and Response

WSF crew members and shoreside Operations Center staff are ready to respond to an oil spill should one occur, whether that spill is a result of a fuel transfer, a leak from a customer's vehicle, or comes from another source. In fact, leaks from customers' vehicles are a common occurrence aboard Washington State Ferries. Although these fluids are rarely at risk of ever reaching the water, crews respond immediately and absorb the spill using the proper response supplies.

Should a spill occur during vessel fueling, the crew is prepared to respond immediately and work to contain the spill onboard the vessel. Procedures detailed in the Safety Management System guide the response, and call for immediate communication to all areas of the vessel, including the Master, deck, and engine crews.

The first action required of WSF crews if a spill of any kind occurs is to identify the spilled material and determine how to safely respond. Crewmembers will respond to spills of known materials such as a customer vehicle leaking oil or gas, the transfer of oil products, sewage, or any workplace chemicals that can be readily identified.

As appropriate, in the event of a spill, WSF personnel will:

- Report the spill to the Master and/or Chief Engineer
- Evacuate customers from the scene of the spill should it occur during operating hours
- Secure all potential sources of ignition
- Wear appropriate personnel protective equipment and attempt to stop the spill at the source
- Contain and absorb the spill using the equipment contained in the portable spill kits located on the deck of each vessel and also at each terminal. Employees will work quickly to check that any deck drains are plugged to ensure that the spilled material is prevented, if at all possible, from reaching the marine environment

In the event that spilled material reaches the waters of Puget Sound, WSF personnel will also:

- Notify the WSF Operations Center about the spill (the WSF Operations Center in turn notifies the National Response Center, the U.S. Coast Guard, and the Washington State Department of Ecology)
- Utilize onboard spill equipment to control as best as possible the spread and impact of the spill. Quickly re-assess the quantities and properties of the spilled material and determine how best to respond
- Notify and activate the Washington State Maritime Cooperative, WSF's pre-designated initial spill response organization. WSF pays about $200,000 per year to support the Cooperative and the resources it has placed at the ready. In return, the Maritime Cooperative:
  - Maintains a Department of Ecology-approved oil spill contingency response plan
  - Provides a spill management team including an Incident Commander and section leaders
  - Includes a dedicated spill response contractor, associated spill response equipment and personnel.
  - Is available 24 hours a day, with a maximum 2-hour response time
- If appropriate, activate the WSF Emergency Operations Center (EOC) along with incident command system personnel

After the spill has been contained and cleaned up, WSF personnel will:

- Properly dispose of the used spill cleanup supplies
- Inventory the spill kits to order and replace the supplies used during the response
- Evaluate the cause of the spill and work to fix broken equipment or modify operations as necessary to prevent future spills

Two Methods for Fueling WSF Vessels

Fuel is provided to WSF through competitively bid state contracts. WSF uses one of the following two methods to fuel its vessels.

Facility Fueling

This method involves moving the vessel to a marine fueling facility. The fuel is pumped under pressure from large shore side storage tanks into the vessel's onboard fuel tanks. Currently about 40 percent, or 7.3 million gallons per year, of WSF's total fuel volumes are transferred to vessels at the Rainier marine fueling facility at Pier 15 on Harbor Island in Elliot Bay.

Onboard Tanker Truck Fueling

All other vessel fueling is performed from tanker trucks driven onboard the vessel during periods when the vessel is not in passenger service and tied up at a WSF terminal. Using this method, the fuel is transferred by gravity through hoses from the fuel truck to the vessel's fuel tanks. This method of fueling is currently being used at Bremerton, Anacortes, Port Townsend, and Point Defiance. Contracts to deliver fuel to vessels at these locations are currently held by Rainier Petroleum, Reinhard Petroleum LLC, and Pettit Oil Company.

Washington State Ferries

Costs to Change Fueling Methods for Particular Routes

Currently, only the largest WSF vessels, located in central Puget Sound, fuel at the Pier 15 Harbor Island facility. Those vessels are located near the facility and have large fuel tanks, so they can take advantage of the faster fueling operation and use the time saved to perform maintenance. However, it is generally more cost-effective — in terms of per-gallon cost, fuel burned in transit, and crewing costs — to use on-board tanker trucks to fuel vessels with smaller tanks that are farther away from a fueling facility.

When fueling at a marine facility, WSF must pay an extra deck crew to move the vessel to the fuel pier or pay overtime to the existing deck crew. Crew expense is the largest cost component associated with fueling at a marine fuel dock. The other major expense is the excess fuel burned in order to make that "non-revenue" trip to and from the fuel facility.

If WSF were to fuel all its vessels at a commercial marine fueling facility, estimates are that it would add an incremental cost of nearly $1.4 million annually to today's fueling costs. Approximately two thirds of this new cost would be for additional deck crew. WSF fuel consumption would increase to make the "non-revenue" trips to the fuel dock, consuming an additional 130,000 gallons at a cost of approximately $195,000 (price was calculated using the cost of diesel fuel for July-Sept. 2004 – $1.50 per gallon).

If WSF were to switch from onboard tanker fueling to shore side facility fueling, the following route-specific cost and service implications should be anticipated.

- **Anacortes/San Juan Island/Sidney, B.C. routes.** Requiring the vessels on this route to fuel at the Bellingham Cruise Terminal (closest fueling facility) would have a considerable economic impact on WSF. This change would result in the largest increase on any route in the system – about $765,000 per year, or 55% of all new costs.

  These costs are comprised of crewing costs to bring the vessels to the fuel dock ($407,000); and excess fuel (about 69,000 gallons per year) to bring the vessel to the facility ($103,000). Because of the location, this route would also incur some unique additional operating costs for pilotage ($203,000) and crew lodging ($53,000).

- **Fauntleroy/Southworth/Vashon route.** The second largest economic impact on WSF would occur on this route. New costs would come to about $186,000 per year, 88% of which is for additional crew, 12% is for extra fuel burned in transit.

Washington State Department of Transportation

- **Port Townsend/Keystone route.** Changing fueling operations for vessels that operate on this route would cause the next greatest economic impact on WSF. The cost to bring these vessels to the fuel dock in Seattle (which is actually closer than going to Bellingham) is $175,000. The additional costs are comprised of crewing (80%) and excess fuel burned in transit (20%). Because this route is so far from Pier 15, these vessels would burn about 23,000 more gallons of fuel per year.

- **Pt. Defiance/Tahlequah route.** Switching from onboard tanker truck fueling to shore side fueling on this route would cost about $135,000 per year, 89% composed of crewing costs and 11% for excess fuel. This vessel would consume an additional 10,300 gallons of fuel per year if she were to fuel at Pier 15 on Harbor Island.

  In addition, moving this fueling operation to the Harbor Island facility would result in the loss of one scheduled trip per week to accommodate the time needed to transit to, and fuel at, the facility.

- **Seattle/Bremerton route.** Just over a year ago, WSF changed its fueling operations on this route from fueling at Pier 15 to fueling by tanker truck. This change resulted in savings of approximately $130,000 per year. As with all the other routes, the largest portion of these savings was comprised of crewing costs (86%), while 14% were comprised of the costs of excess fuel burned to move the vessels back and forth.

- **Mukilteo/Clinton route.** WSF intends to begin fueling the vessels that operate on this route via tanker truck, saving approximately $55,000 per year. Again, the majority of these costs (80%) are comprised of vessel crewing costs, while 20% is the cost of the fuel burned traveling to and from the facility. Implementing this proposed change will result in saving nearly 7,600 gallons of fuel per year.

- **Seattle/Bainbridge, Edmonds/Kingston, Vashon/Seattle Passenger-Only routes.** WSF currently incurs direct costs of approximately $500,000 per year associated with fueling the central Puget Sound vessels at the marine fuel dock at Pier 15 on Harbor Island. Of these costs, approximately 87% are associated with crewing the vessels while transiting to the fuel dock. The remaining costs are associated with the excess fuel that is burned during refueling trips.

The current judgment at WSF, however, is that it is in fact cost-efficient to continue to fuel these vessels at Pier 15 despite the costs. These vessels have shorter lay-up periods and larger fuel tanks, so the faster fueling provided by the pressurized pumps at the facility frees up valuable time to perform maintenance. The routes served by these vessels are all located close to the facility, which minimizes the transit fuel expense in relation to the savings of time in using the Pier 15 facility.